

Greenpeace Apology

In a September apology to Royal Dutch Shell, Greenpeace International admitted it may have gone overboard when it came to estimating the amount of potentially hazardous petroleum that would have been released by ocean disposal of the company's Brent Spar oil rig. The environmental group had used tactics such as mounting the rig during its towing to a dumping site in the Outer Hebrides off the coast of Scotland and provoking an international boycott of Shell gasoline to force the company to abandon plans to dispose of the rig at sea, saying that doing so would be very hazardous to the environment.

Greenpeace originally estimated that sinking the oil rig would release 5,500 metric tons of petroleum into the ocean ecosystems. In his written apology, Greenpeace Executive Director Lord Peter Melchett said that that figure was simply wrong. The erroneous estimate was based on an improperly conducted storage tank sample, according to Melchett. Greenpeace did not offer a revised estimate.

Shell gave in to political and economic pressure in June and changed its plan to dump the rig, which had been approved by Great Britain, to a plan for on-land decommissioning. The company will conduct an environmental impact study on means of disposing of the rig before making a decision about its final fate.

in Boolaroo, who said that lead exposures in her area of Broken Hill and in other smelting towns created second-class citizens.

An AMA/ACF/Greenpeace coalition will raise the profile of environmental health. Within the political arena, the coalition will target community "right to know" issues, including a National Pollutant Inventory. Caswell said that prior to establishment of the coalition, "There was a lack of government commitment to address accelerating environmental degradation and a vacuum in public policy development to address long-term environmental degradation, particularly water resources and population issues."

The coalition, which toured "chemical hot spots," including cotton growing areas where pesticide use is heavy in New South Wales and contaminated land sites in Melbourne, Victoria, before the summit, endorsed the need for a national health effects reporting system for chemicals. The register would include agricultural, industrial, and household chemicals and, using coalition established criteria, would document instances where doctors believed patients had suffered adverse effects from exposures. Weedon said, "We are concerned that there are medical effects from exposures to chemicals following improper use and occupational or accidental exposures." The Australian Council of Trade Unions (ACTU) recently completed a study that indicates that chemical exposures are a major cause of workplace injuries (an estimated 2,200 deaths per year).

Senator John Coulter, a research scientist and environment spokesperson for the Australian Democratic Party, focused on degradation of national water resources,

particularly overuse for irrigation, which has resulted in extensive salination of some of Australia's best agricultural land. "Australia has the unenviable reputation of the world's largest outbreak of blue-green algae in the Murray River system in 1993," Coulter said.

John Donovan, principal medical advisor to the Australian Institute of Health and Welfare in Canberra, provided a summary of the results from the National Children's Blood Lead Survey. According to Donovan, more than 93% of the children sampled between April and June 1995 had blood lead levels lower than the National Health and Medical Research Council target for all children (below 10 µg/dl by 1998). Donovan also indicated that for the remaining 7% of children, ambient air pollution and lead paint in housing could not adequately account for the observed levels. There was a strong correlation between blood lead levels and levels of household dust in homes of these children, with dustier homes associated with elevated blood lead values. Other significant correlations existed with childhood pica (hand-to-mouth behavior) and parental smoking in the home.

The Australian Capital Territory Government Environment Minister, Gary Humphries, identified arsenic as a new urban problem. Canberra, the national capital that was built on sheep country in 1901, has recently discovered old animal dip sites in residential areas. "The problem is much more than the physiological health of the residents," said Humphries, "the issue is clearly an emotive one and goes right to the heart of the community's perceptions of risk." Humphries stressed the need to maintain community involvement through information campaigns and close

consultation and participation in the management of the remediation.

Erin Jackson, head of Greenpeace's Climate Impacts Unit, spoke of the increasing international concern that the long-term impacts of climate change represent one of the greatest challenges for humanity. Increased frequency, severity, and wider distribution of crop losses, spread of infectious diseases into new environments, heat waves, and flooding from rising sea levels will bring a generation of "environmental refugees," Jackson said.

The next major environmental health gathering in Australia will take place at the Intergovernmental Forum on Chemical Safety in Canberra on 3-8 March 1995.

Carbon Monoxide-Heart Failure Link

Every year, hospitals in the United States admit roughly a million patients with congestive heart failure, a condition in which the heart pumps less blood than normal. Researchers now think tens of thousands of these admissions may be linked to carbon monoxide (CO) in the air.

A study in the October issue of the *American Journal of Public Health* reports that increases in outdoor CO may cause shortness of breath in people with congestive heart failure, sending them to the hospital. "Across the country, with each day that showed an increase in carbon monoxide, we saw an increase in hospital admissions," says lead author Robert D. Morris, an epidemiologist at the Medical College of Wisconsin in Milwaukee. "The consistency was striking."

Carbon monoxide, a common air pollutant, results from burning hydrocarbon-based fuels. According to the EPA, motor vehicles generate over 90% of urban CO pollution. Car tailpipes emit the gas directly into the air. Other CO sources include factory emissions, gas stoves, and tobacco smoke.

Carbon monoxide presumably aggravates heart disease by binding to hemoglobin, thereby hindering oxygen transport through the blood. "In particular, carbon monoxide appears to affect congestive heart failure patients who also have lung disease," says Morris. In the study, 15% of hospitalized patients had both lung and heart disease. Nationwide, an estimated 3 million people, most over the age of 65, suffer from congestive heart failure.

The study is one of the first to explore outdoor the effect of CO on heart disease. Morris and colleagues compared Medicare data on heart failure hospitalizations with air pollution readings collected by the EPA

in seven U.S. cities: Chicago, Detroit, Houston, Los Angeles, Milwaukee, New York, and Philadelphia. Looking at data for 1986–1989, the researchers found that 3,250 (about 5.7%) of the cities' annual congestive heart failure hospitalizations correlated with an increase in air CO.

Thomas E. Dahms, a cardiovascular physiologist at St. Louis University who has studied CO, cautions that the study's retrospective approach is limited. "For one thing, congestive heart failure is a loosely defined diagnosis," Dahms says. "To validate its consistency between hospitals, you'd have to do some spot checking of patient records."

Dahms also worries whether air pollution readings accurately reflect an individual's exposure to CO. "There have been a number of studies trying to relate personal CO exposure levels to air readings picked up at monitoring stations 50 to 100 feet off the ground," he says. "So far, there has been little validation in relating the two."

But Joel Schwartz, an epidemiologist at the Harvard School of Public Health who wrote an editorial accompanying the study, says the work is informative. "There is certainly a chance for misdiagnosis when looking across cities," Schwartz says. "But within any one city's analysis, it shouldn't be a problem." Such misdiagnosis is absorbed during statistical analysis, he says. Schwartz adds that, despite inconsistencies, there is a clear link between personal exposure and air pollution readings: "The real question is, If I took everyone in this city, averaged their personal exposure to CO and correlated that, day to day, with the average outdoor air pollution readings, what would I find? Would the averages go up and down together? We won't know until we do more studies."

Morris agrees his findings are preliminary. "Clearly, this study raises as many questions as it answers," he says. One question involves the amount of CO that exacerbates heart problems. The health effects cited in this study occurred below federally permissible CO levels. "From the lowest levels of carbon monoxide, we are seeing an increase in hospital admissions with rising pollutant," Morris says. "If future studies do establish a minimum CO effect threshold, that may impact EPA air standards."

The EPA attempts to control CO pollution by regulating motor vehicle emissions. The Clean Air Act of 1990 strengthened tests for auto emission standards and required oxygenated gasolines, with additives to improve fuel efficiency, for metropolitan areas with high CO levels.

Morris next plans to study exposure to

another common auto pollutant: fine combustion particles. "It's possible that this pollutant, along with carbon monoxide, contributes to the heart failure admissions we reported," Morris says. "Now we've got to separate the two pollutants and find out how important each one is."

Barking up the Right Tree?

People may now have one more reason to save trees: they might someday save your life. In a recent study at the University of Illinois at Chicago, a compound called betulinic acid, derived from the bark of white birch trees, has been shown to halt the growth of melanoma cancer cells. More importantly, the compound selectively targets these cells, providing hope that a chemotherapeutic drug developed from betulinic acid will have very few side effects.

The compound was originally extracted from the bark of an African tree, *Ziziphus mauritiana lam* (Rhamnaceae). It was later found in the bark of the common white birch. Unlike extracting taxol, another chemotherapeutic substance obtained from tree bark, the process to extract betulinic acid is relatively simple, involving a chloroform extraction and crystallization process.

Betulinic acid was shown to be a highly effective antitumor agent in a study published in the October 1995 issue of *Nature Medicine*. The study reported on a successful series of cell culture experiments with four human melanoma cell lines (derived from lymph node, lung fluid, liver, and skin). The growth of the cell cultures was specifically inhibited using half the maximal effective doses of 1–5 micrograms per milliliter. Researchers tested the compound in immune-suppressed mice that had been induced to develop human melanomas. In these experiments, tumor growth was either inhibited significantly or halted in the treated group. A drug called DTIC (dacarbazine), commonly used to treat human melanoma, was used as one of the positive controls. The betulinic acid-treated mice showed three times greater tumor inhibition than the DTIC-treated mice.

"These results are very encouraging," says John Pezzuto, director of the Program of Collaborative Research at the University of Illinois. "Of the thousands of agents screened, betulinic acid is one of the best compounds to come out of our lab in the last five years." A potentially beneficial property of betulinic acid is that it does not appear to affect other human cancer cell types, suggesting a unique specificity for melanoma that may shed light on the mechanisms of this disease. Current anti-

neoplastic agents such as captothecin, taxol, and vinblastine are toxic to multiple cell types, resulting in damage to normal tissue.

Several pharmaceutical companies have shown interest in funding the development of betulinic acid. According to Pezzuto, *in vivo* tests are continuing and will be followed by rigorous toxicity testing. If the results are positive, an investigative new drug application may be filed with the FDA as early as 1996, allowing human clinical trials to begin.

In addition to treating malignant melanoma, a disease that strikes 1 in 90 Americans, the compound may someday be used to prevent and treat other skin cancers. Skin cancers, with about 800,000 new cases per year, are the most frequent type of cancer in the United States. The compound's efficacy will eventually also be tested against a variety of other tumor types such as neuroblastoma, a type of brain tumor. In addition, because of its emerging excellent safety profile, Pezzuto envisions betulinic acid's potential usefulness in consumer products such as sunscreens.

According to one expert, it may be too soon to tell the real potential for this bark extract. Antonio Buzaid, a melanoma specialist at the University of Texas MD Anderson Cancer Center, recently commented in *Science News* that "in most cases, such effective drugs don't pan out in people." This caution is echoed by Don Morton, medical director and chief of surgery at the John Wayne Cancer Institute, who conducts research on



Made in the shade. A substance isolated from the bark of white birch trees shows promise for treating melanomas.